

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
CATHODERAY

17CLP4

Specialized - Cathode Ray electronic tube

Seventeen-inch rectangular direct-view television cathode-ray tube with electrostatic focusing and magnetic deflection. Rauland documentation gives high-voltage anode capability to about 17.6 kV for bright monochrome picture presentation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	6
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	17600 V
CRT accelerator/final-anode maximum mapped to MaxPlateVoltage.	

17CLP4 — 17-Inch Rectangular Cathode Ray Tube

The **17CLP4** is a short-neck, 17-inch rectangular direct-view picture tube designed for television applications. It features electrostatic focusing, 90-degree magnetic deflection, and a metal-backed screen.

Mechanical and Physical Characteristics

The 17CLP4 is constructed with a rectangular gray filter glass faceplate that provides approximately 74% light transmission. The screen utilizes an aluminized P4 phosphor, which exhibits white fluorescence and medium persistence.

The physical dimensions of the tube are:

- **Overall Length:** 15-5/8 ± 3/8 inches
- **Greatest Diagonal Dimension:** 16-5/8 ± 1/8 inches
- **Greatest Width:** 15-3/8 ± 1/8 inches
- **Greatest Height:** 12-9/32 ± 1/8 inches
- **Minimum Useful Screen Dimensions:** 11-1/8 x 14-5/16 inches
- **Minimum Useful Screen Area:** 149 square inches

Electrical connection to the high-voltage anode is made via a Recessed Small Cavity Cap (J1-21) located on the bulb. The base is a Small Shell Duodecal 6-pin (B6-63) with a 12L basing designation. The J1-21 bulb contact aligns with Pin No. 6 within a tolerance of ±30 degrees.

Heater and Pinout Configuration

The 17CLP4 is equipped with an indirectly heated cathode. The nominal heater ratings and tolerances are:

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 ± 10% A

The 12L basing arrangement provides the following pin connections, viewed from the bottom of the base:

Pin	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 6	Grid No. 4 (Focusing Electrode)
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Recessed Cavity Cap	Final Anode (internally connects Grid No. 3, Grid No. 5, and Collector)

Interelectrode Capacitances

The approximate interelectrode capacitances of the tube are:

- **Cathode to All Other Electrodes:** 5 µF
- **Grid No. 1 to All Other Electrodes:** 6 µF
- **External Conductive Coating to Anode:** 1800 µF minimum, 2300 µF maximum

The high-capacity external conductive coating, when properly grounded, functions as a filter capacitor for the high-voltage supply and assists in radiation suppression.

Electrical Ratings and Operating Conditions

The operating limits and typical operating parameters of the 17CLP4 are categorized into absolute maximum ratings and typical operating conditions.

Absolute Maximum Ratings

- **Final Anode Voltage:** 17,600 V DC
- **Grid No. 4 Voltage (Focusing Electrode):** -550 to +1,100 V DC
- **Grid No. 2 Voltage:** 550 V DC
- **Grid No. 1 Voltage:**
 - Negative Bias Value: 155 V DC
 - Negative Peak Value: 220 V DC
 - Positive Peak Value: 2 V
 - Positive Bias Value: 0 V
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode (during warm-up, ≤ 15 seconds): 450 V DC
 - Heater negative with respect to cathode (after warm-up): 200 V DC
 - Heater positive with respect to cathode: 200 V DC

Typical Operating Conditions

- **Anode Voltage:** 14,000 V DC
- **Grid No. 4 Voltage for Focus:** -48 to +264 V DC (the focus electrode may be modulated to improve overall focus)
- **Grid No. 2 Voltage:** 300 V DC
- **Grid No. 1 Voltage for Cutoff:** -35 to -72 V DC (required for visual extinction of the focused raster)
- **PM Ion Trap Magnet Field Strength:** 35 Gauss (for a typical permanent magnet ion trap magnet with a ± 3 gauss tolerance)

Circuit Design and Safety Considerations

The maximum grid No. 1 circuit resistance must not exceed **1.5 Megohms**.

Because the tube operates at high voltages, safety precautions regarding radiation must be observed. Specifically, X-ray radiation shielding may be necessary if the tube is operated at voltages exceeding 16,000 Volts.

Technical Summary

The **17CLP4** is a 17-inch rectangular, 90-degree magnetic deflection picture tube featuring electrostatic focus and a short-neck design. It operates with a 6.3 V, 0.6 A heater and utilizes a Small Shell Duodecal 6-pin base. The tube is characterized by its aluminized P4 phosphor screen, gray filter glass faceplate, and an external conductive coating that provides filtering and radiation suppression. With a maximum anode rating of 17,600 V DC and typical operation at 14,000 V DC, it requires an external single-field ion trap magnet and may require X-ray shielding when operated above 16,000 V.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Rauland

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 RAULAND

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	600 mA	—
Typical anode/accelerator voltage	14000 V	—
Typical grid 2 voltage	550 V	—
Maximum heater-cathode voltage	200 V	Heater positive to cathode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection method	Magnetic	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	—

TUBE TINKER

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